DOCUMENT RESUME

ED 332 950 SO 030 416

AUTHOR Roedding, Gary R.
TITLE Using Computer Assisted Instruction To Improve Student's Performance Skills in Social Studies.
PUB DATE Jun 90
NOTE 74p.; M.S. Practicum, Nova University. Program listing printed scroll-fashion on p.61-66, without page breaks.
PUB TYPE Dissertations/Theses - Practicum Papers (043) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Computer Assisted Instruction; Computer Software; *Computer Uses in Education; Drills (Practice); Learning Activities; *Learning Problems; Low Achievement; Secondary Education; Skill Development; *Social Studies; Student Improvement; *Teaching Methods; United States Government (Course); United States History; World History

ABSTRACT

One of the problems that teachers face in a knowledge-based social studies curriculum is the diversity of academic levels in a given class. The low level learner gets lost in the rush to cover the material and keep the interest of the other students. This project implemented a computer drill and practice program for those students who consistently scored low on tests in government, world history, and U.S. history. The students used the program during 2 units or 3 times a week for about 30 minutes. The program reviewed in a drill card format pertinent facts that the students would see on tests or quizzes. The objective of the program was to increase the student's performance skills in class review and on the curriculum tests. The results seemed to indicate that there was an increase in the performance skills of those students using the program although not as much increase as had been desired. Students in the target groups scored higher on their tests and most of them demonstrated increased review time participation. Appendices include Ehman and Glenn's questions on computer activities, files available to drill, a screen display from the program, instructions used with the program, and the student's record sheet. (Author)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED332950

USING COMPUTER ASSISTED INSTRUCTION TO IMPROVE STUDENT'S PERFORMANCE SKILLS IN SOCIAL STUDIES

by
Gary R. Roedding

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

A Practicum Report
submitted to the Faculty of the Center for the Advancement of Education of Nova University in partial fulfillment of the requirements for the degree of Master of Science.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
GARY ROEDDING
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

The abstract of this report may be placed in a national Database System for reference.

June/1990

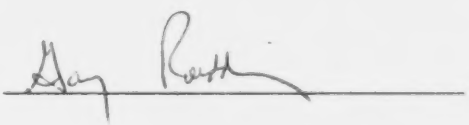
SO 020 416

BEST COPY AVAILABLE

JUL 2 6 1990

Authorship Statement

I hereby testify that this paper and the work it reports are entirely my own. Where it has been necessary to draw from the work of others, published or unpublished, I have acknowledged such work in accordance with accepted scholarly and editorial practice. I give this testimony freely, out or respect for the scholarship of other workers in the field and in the hope that my work, presented here, will earn similar repect.

Signed 

Abstract

Using Computer Assisted Instruction to Improve Student's Performance Skills in Social Studies. Roedding, Gary, R., 1990: Practicum Report, Nova University, The Center for the Advancement of Education.
Descriptors: Computer Assisted Instruction/Social Studies/ United States Government/United States History/World History/Computer Software/Computer Uses in Education/Study/ Learning Problems/Low Achievement/Student Improvement

One of the problems that teachers face in a knowledge based social studies curriculum is the diversity of academic levels in a given class. The low level learner gets lost in the rush to cover the material and keep the interest of the other students. This project implemented a computer drill and practice program with those students who consistently scored low on tests in government, World history, and United States history. The students used the program during two units two or three times each week for 30 minutes or so. The program reviewed in a drill card format pertinent facts that the students would see on tests or quizzes. The objective of the program was to increase the student's performance skills in class review and on the curriculum tests. The results seemed to indicate that there was an increase in the performance skills of those students using the program although not as much increase as had been desired. Students in the target group scored higher on their tests and most of them demonstrated increased review time participation. Appendices include Ehman and Glenn's questions on computer activities, files available to drill, a screen display from the program, instructions used with the program, and the student's record sheet.

JUL 2[illegible] 1990

Nova University
Center For The Advancement of Education
3301 College Avenue
Fort Lauderdale, FL 33314

Observer Verification Form

Verification of Practicum Activity

Dear Observer:

Practicum students in Nova's M.S. and Ed.S. programs are asked to provide external verification that the project activities reported in their final practicum documents took place as described. You have been designated an observer to fulfill this confirmation function by the student named below. On this sheet, then, please write a note attesting to your knowledge of the project activity described in the final practicum report to which this will be attached. (Note that you are not asked to evaluate or make judgments about the quality of the project.)

Practicum Title Using Computer Assisted Instruction to Improve Student's Performance Skills in Social Studies

Student's Name Gary R. Roedding

Program Site Ft. Myers, FL Date June 6, 1990

Observer's Name C. GORDON ACTON C. Gordon Acton
(please print---------and sign)

Observer's position COMPUTER TEACHER Phone # 544-3767

Observer's comment on impact of the project (handwritten):

My computer lab became a popular place after school when Mr. Roedding's students came to practice. Student response from the beginning was one of excitement about this method of learning. Several used the program for serious study and review

BEST COPY AVAILABLE

Table of Contents

Page

Title Page i

Authorship Statement ii

Abstract iii

Observer's Verication iv

Chapters

I. Purpose 1

II. Research and Solution Strategy 9

III. Methodology 21

IV. Results 31

V. Recommendations 37

Reference List 40

Appendices

Appendix A: Ehman and Glenn's Questions on Computer Activities . . 44

Appendix B: List of Files Available to the Students . . 46

Appendix C: Screen Display from the Drill Program . . 48

Appendix D: Instructions for the Drill Program . . . 50

Appendix E: Student's Record Sheet 53

Attachments 54

CHAPTER I

Purpose

School Setting

The setting for this project was a private inter-denominational Christian school. The school is very small. There are classes for grades K-4 through 12, but in the high school division only 112 students are enrolled. Although the school does not have accurate socio-economic figures, most of the students enrolled in the school are from middle to upper-middle class families with a small percentage from lower income families. It is highly doubtful that any of the students would be from families considered in the poverty range.

Nearly every student at the school is there by parental choice. Many reasons go into sending a child to a private religious institution: religious training, small school setting, problems (academic or discipline) at other schools, academic training parents feel is lacking in public schools, protection from negative influences, or the child's desire to be there. No

matter what the reason or expectation, realistic or unrealistic, nearly all parents think their children should be doing well in this setting. They do not want to pay a tuition fee for low grades.

The situation is complicated by the fact that since the school is small most of the classes are mixed academically. The author's classes range in size from 17 to 28 students. On average about four to eight of the students in any given class would be of the honor or advanced placement level. There are also at least three to five students in each class that are low academic achievers and need much more review and less extra material in order to keep up with the academic requirements. Each teacher has to balance this aspect which usually means teaching to the middle group and having some students receive high marks without much challenge and some students struggling to maintain a passing grade.

The Curriculum

The curriculum the school uses in the social studies is a spiral curriculum published by A BEKA Books. The history curriculum begins in the third

or fourth grade. It is rapid paced with a major curriculum achievement test, also published by A BEKA Books, given every two or three chapters (approximately every three weeks). The tests are 90 percent objective with questions covering names, terms, places and dates. These curriculum tests count as 50 percent of the student's quarter grade.

The Author

The author of this proposal taught the high school social studies classes. In a seven period day, each teacher at this school has six classes. During those six periods the author taught five different subjects. There were 119 students in those six classes (some students take more than one class with the same teacher). Four of the classes had at least one major project that had to be graded. This teaching schedule left very little time for help classes or individualized instruction or tutoring.

Computers

The school does not have computers in individual classes. The school does have a computer lab with 12 Tandy 1000 computers. The lab was used during most of

the day for high school programming classes or elementary and junior high computer literacy courses. The lab was available for use before and after school if the computers were not being used by teachers. There were also four printers available.

The Problem Defined

The curriculum tests that are given in the history and government courses at the author's school are meant to see if the students have gained a mastery of the knowledge objectives for that unit. They are difficult and often deal with, in the author's assessment, obscure facts and meaningless trivia. Nevertheless, the tests must be used. The problem is that too many students were scoring below 75 percent on these tests and were receiving D's or F's. Those students who consistently scored below 75 percent became the target group for this project. The author did not want to spend additional time in class drilling names and facts, but no less than 10 percent of the students should score below 75 percent and ideally no one should fail.

For each standardized test, students have to memorize a number of people, terms and dates and associate them with specific facts. The teacher is often tempted to teach the test and ignore other important aspects of historical study, such as interpretation, providence vs. chance, history's inter-relation with the present, the influence of philosophy on actions. According to Piaget's theory, by the time children are in high school, they should be dealing with these types of abstract thinking, but there just is not enough time in class. More time should be able to be used on these skills in social studies rather than on drill and review while allowing the students the opportunity to do well on the tests.

Evidence for this problem

During the third quarter, 17 percent of the students in world history failed every test even though they completed virtually all of their homework and classwork (90 percent or better) and took notes in class. In United States history, 21 percent scored below 75 on the first test and 29 percent on the second test and the Quarter Exam. Again most of these

students turned in class notes and did most of their assignments. In the Ninth Grade Government class, the statistics were worse. 57 percent scored below 75 on the first test, 43 percent on the second and the Exam. In all of these classes, most of the students passed because of other grades, but these figures were too high. They needed to be reduced by 20-40 percent.

Possible Causes

The assumption can be plausibly made that some of the students who received low grades earned the scores they received. They refused to participate in class or to study for the tests, but it is the responsibility of the teacher to exhaust every avenue available to encourage the student to learn the material presented. There were other students, however, that did not know how to study or how to recognize significant facts and details. Two students who did note cards for extra credit completely missed the major portion of the material that was to appear on the test even though it was stressed in notes and review. They studied hard, but the wrong items. This led to apprehension on their part to approaching test material at all.

The author could have spent more class time drilling significant facts (five to ten minutes are presently spent with review), but this seemed to be counter-productive. The students who needed this type of review were the ones distracted the most during review time. They would goof off or would not listen.

More time in review would have left less time for class interaction, student interpretation and simulation, or oral projects. The curriculum had to be covered, the material mastered, and yet the students had to have the opportunity to develop critical thinking skills. If the class were all lecture and review, it would be boring to the more advanced students and the teacher. This project sought to improve the performance skills of those students who scored low grades on their standard curriculum tests without taking additional class time.

Outcome Objectives

The author proposed two outcome objectives to be achieved through this practicum. The first was an increase in performance skills as demonstrated by curriculum test scores. During two units of study,

students in government, world history and United States history who averaged below 75 percent on their last three unit tests would while participating in the project increase their performance skills in order to raise their test scores to at least 75 percent.

The second objective was that during the implementation period of this practicum, those students participating in the project would exhibit a more positive approach to class review as observed in their willingness to participate in the review time and their knowledge of the subject. The student should voluntarily answer correctly during review time, actively participate in class games or discussions and be able to respond when called on by the teacher. The author was to observe and record changes seen in the participation and correct responses during class review of those students who had scored poorly on the previous tests.

CHAPTER II

Research and Solution Strategy

In the papers which the author wrote in college pertaining to a historical, philosophical or theological field, the author was to include any presuppositions which may have affected the interpretation of the events, method of research or conclusion. With that in mind, the reader should know that as a Computer Science Education major, the author of this practicum had to use the computer within his solution strategy. Therefore, the research has been limited somewhat to be within the confines of the computer field.

Information Collection

Rooze identified two major approaches to social studies curriculum. The first approach has the emphasis on knowledge. In order to prepare good citizens, social studies teachers provide the student with knowledge of "his cultural heritage and teach him the values of the dominant culture" (1983:1). Problem solving or thinking skills become secondary in this

approach. The second approach places an emphasis on skills. According to this method, to develop good citizens the teacher teaches the students specified skills to bring the students to a point where they can know how to make decisions from various alternatives. The approach used within the curriculum will influence the teaching and learning activities that are used including computer based activities. This idea that the approach will affect a computer based program is further developed in Marlow Ediger's paper "Philosophy of Computer Use in the Social Studies" (1989). The curriculum at the school used in this project is knowledge oriented, ". . . the traditionalists, who promote the great literature, history, and ideas of western man . . ." (Rooze, 1983:2).

The objectives in the curriculum used in the author's school are almost entirely knowledge based and the tests and class grades are set up on that basis. To be able to prepare the student for critical or analytical thinking which is where high school students should be in cognitive development, or to allow the student the confidence and the security to feel good about oneself and the class, there must be mastery at

the first levels of Bloom's taxonomy, knowledge and comprehension. In a slightly outdated but still helpful book, Developing Attitude Toward Learning, Mager (1968) referred to some things that cause adversive conditions in students. One of those things is going at the same rate for all levels of students. A spiral curriculum practically forces one to do that. Mager also mentions repeated failure as another adversive situation.

Can computers help a teacher propel students past the first levels of Bloom's taxonomy and open the way for critical and analytical thinking and evaluation in a social studies classroom? According to the available research, one really cannot be sure (Nelson and Shaver as cited by Ross, 1988; Becker, 1987; and Ehman and Glenn, 1987), but nearly everyone seemed to think so. In reports published in 1983 and 1985, Kulik and others cited by Schug (1988) and by Ross (1988) said that students using computer assisted instruction (CAI) outscored students in control groups. Ross stated the reports "concluded that computer-based education programs are more effective in raising student's scores on standardized achievement tests than alternative

approaches" (1988:5). Schug (1988) argued that there is a "reason to think" that students learn better using computers and that their attitudes toward the subject matter may improve. Bulkeley reported in the Wall Street Journal that "Studies show that students using computer-aided instruction will achieve mastery of a subject 10% to 30% faster . . ." (as quoted in The Social Studies, 1988:115).

Becker (1987) questioned the findings of the Kulik reports, stating that most of the evidence came from the pre-microcomputer period and that virtually none of the research dealt with high school courses. In fact, in Becker's research for his review, he found no studies for computer effectiveness in high school social studies that could be included in his report and did not even include social studies in a chart on computer activity per subject (1987:49-50). Ross, though generally supportive of computer use in social studies classes, referred to the fact that "research focusing specifically on computers in social studies has been scant . . ." (1988:7). Ehman and Glenn also concurred that findings are sketchy at best. They wrote, "Drill and practice programs dominate the social

studies computer software market, but surprisingly little research has been done to examine its effects on student learning and attitudes" (1987:10).

If the studies are inconclusive then why even consider the computer as a possible solution to low achieving history students? Because, there is a strong possibility that CAI is effective. Besides the Kulik and Schug reports, Niemiec and Walberg (cited by Ehman and Glenn, 1987) stated that the overall average effect size in CAI is .42 meaning 66 percent of students using CAI would outperform those who do not use computers. Ross (1987) reported in the results of a survey that almost 80 percent of those who responded to the survey agreed that computers can aid the quality of education. In another study,

> Teachers who said they used the computer for instruction usually reported good results: that students enjoyed using the computer, that it was effective . . . for drilling facts or remediation and that it added variety to instruction. (Schug, 1988:113)

Bailey (1987) found good results with the CAI used in social studies classes, and Marsh stated that "factual materials may be more quickly and efficiently taught when students use a computer for learning" (1986:135).

These teachers and educational researchers seem to feel that the computer can be a tool to enhance learning and performance skills in students.

What have other teachers in social studies classes done with computers? Unfortunately, very little. Ross (1987) referred to the fact that there seems to be very little reported use of the computer in the social studies classroom. Nearly every other report that discussed this issue stated the same thing. Ehman and Glenn (1987) indicate several reasons for this lack of computer use including the low number of computers available, teachers not knowing what to do with computers and not knowing how to use computers. Another cited problem in the lack of use was the shortage of good social studies software in the high school (Schug, 1988). MECC does have a few, but the author's school does not have access to these.

Even though computers within the history curriculum have not been used extensively, there has been some work done. One teacher reported on a project in which the teacher learned a programming language and developed a simulation program on the War of 1812. It took four years to accomplish the program which was a

one week unit. The results on tests covering the unit did demonstrate that the computer helped lower level learning, but the time involved to develop the program was discouraging (Marsh, 1986). However, a middle school teacher reported using a self written drill and practice program written in BASIC language that had a positive effect on lower level students who had difficulty in the learning and comprehension stages (Bailey, 1987). The students worked in pairs and had to run the program until they achieved a perfect score. Tests scores improved and the students seemed to retain the information. The use of a CAI program gives this author the possibility of testing the theory that computers can raise the "lower-level cognitive outcomes of junior and senior high students" (Ehman and Glenn, 1987:14).

There is evidence that computers do enhance learning. However, one must decide what type of CAI will be most effective in increasing the performance skills of lower-level students in a knowledge approach to history. Rooze (1987) indicated four major types of CAI: 1) Drill and practice, 2) Tutorial, 3) Compuerized Databases, and 4) Simulations. Databases,

supported by Lineweaver (1988) are geared more toward high level learning and research skills which are not objectives of this practicum. The information on tutorials (Rooze, 1987; Cohen, 1983) made this form also seem inapplicable to the particular problem.

If databases and tutorials do not exactly fit, that leaves simulation and drill and practice. In the studies used for this project, simulation seemed to be preferred by most of the researchers (Cohen, 1983; Alper and Holmberg, 1984; Flouris, 1987; and Budin, Taylor and Kendall, 1987) because it provided thinking skills as well as knowledge. However, the lack of good simulations programs that would fit a specific predetermined curriculum, the difficulty of developing a simulation that would cover several units, and the writer's lack of experience with simulation would weaken the arguments for its use. In considering drill and practice, the literature presented both pros and cons. As already mentioned in this study, Bailey (1987) indicated positive results in a CAI drill program. Rooze (1987) gave three advantages to drill and practice including immediate feedback of results and using a drill program to supplement instructional

material. Flouris wrote that CAI drills can be used in the final step of the instructional sequence: enhancing retention and transfer. He stated, "If the purpose of social studies education is to promote memorization or rote learning, then drill and practice becomes a valuable tool . . ." (1987:17). Ehman and Glenn (1987) argued that drill programs can help in dealing with the diverse learning needs of a social studies classroom.

There were three major negative concerns that were mentioned in the research regarding the use of drill and practice CAI. The first was to be cautious not to use drill and practice to teach content (Ehman and Glenn; Alesandrin, cited by Rooze, 1987). A second concern was that students may become bored if a game is not included (Alper and Holmberg, 1984; Budin, Taylor and Kendall, 1987). A third negative to drill and practice was that students may reach a level of learning where they will not improve no matter how much time they spend with the program (Ehman and Glenn, 1987).

Solution Strategy

In considering the research regarding the use of CAI instruction and the problem that was previously described, the decision was made to modify a drill and practice program that was written by the author for a course in advanced BASIC. The program was upgraded to provide a user friendly drill format for use with low level students who seem to be having trouble with the first two levels of Bloom's taxonomy. This was based on several considerations and circumstances.

It seemed from the literature that in a knowledge approach to social studies such as the writer's school uses and in dealing with students on the lower end of the learning taxonomy, drill and practice would be the most effective means of improving performance skills. Students could work at their pace on the specific material in which they needed help. They could repeat the program as many times as they needed to in order to bring their performance up to an acceptable level. It would provide a new medium of study for the students and therefore might increase interest. It could help students pinpoint particular problem areas and help them recognize material they needed to study.

One advantage to using the computer over holding help classes or using class drill card techniques was that the teacher could supervise the individualized instruction of several students in different classes studying different materials all at the same time. This would relieve the personal pressure of wanting to see the students achieve, parental pressure of doing everything possible for the student's grades, and student's pressure of additional help on subject.

In the development and modification of the CAI program, attention was given to the six criteria of Wright and Forcier (cited by Ediger, 1989):

1. Format is interactive.
2. User can establish the pace.
3. Provision made for a progression in levels of difficulty.
4. Items at the same level of difficulty can be selected at random.
5. Employs motivational techniques.
6. Rewards for correct responses.

Ehman and Glenn (1987) gave a series of questions to ask about computer activities in the areas of instructional effectiveness, classroom management, software, and hardware that helped in effectively evaluating the program (Appendix A:44).

In developing the implementation plan, care was taken in several areas. First, the CAI program was not to be used to teach material, only to reinforce previously taught material. Students had to be able to see their results and chart their improvement. The teacher could not depend on the program as the only reinforcement tool, but had to continue using review strategies already being employed.

The program provided drill and practice in three subjects: government, world history, and United States history. The author secured permission to use the computer lab before and after school, approached the students and encouraged them to participate and cooperate. A letter was sent home advising the parents of the new program and asking for their support. A supervision set up was arranged and special situations, such as computers at home or computer time during study hall, were dealt with as they came up.

CHAPTER III

Methodology

Constructing the Program

The author modified a CAI drill and practice program that had been written for a programming course in advanced BASIC. The writing and modifying of the program was the most difficult part of the practicum project. In a rough estimation, probably 30 or more hours were spent writing and debugging the original program. An additional 30 or more hours were spent working it into the format desired for this project. The author kept the same basic screen design from the original program, but had to expand that program to include three separate subjects, separate chapters in each subject, and to break down the chapter into people, terms and dates.

The program which was written for a Tandy computer with a color monitor was constructed so that it was menu driven with as few keystrokes entered by the student as possible. The student would choose the subject from a menu, after being prompted type in the

chapter of the textbook that was being studied, and then select people, places or dates. A listing was given to the students of the chapters and types available for that unit (Appendix B:46). After the student selected the content to be drilled, the file was loaded into the computer from a disk drive and the instructions were printed onto the screen. Files could be constructed with up to 50 drill cards, but the author tried to keep files under 25 questions because smaller files gave more immediate reward.

The author decided that for ease of use and in order to avoid difficulty in typing or spelling skills on the part of the students, answers would not be typed in. The questions were shuffled so that the order would be different each time. A question would be displayed on the monitor and the student would answer the question mentally to oneself or verbally to another student. After answering, the student would press any key and the correct answer would be displayed under the question (Appendix C:48). The student would then enter the student's answer as correct or incorrect with a single keystroke. This way a student could use the program with almost no keyboarding skill.

At the end of the set of drill cards, the number of correct responses would be displayed and the score given in a percentile form as if it had been a quiz or test. If the student scored better than 90 percent, a display would flash, "Great!", change color and then display the score.

The last step in preparing the program was to allow a way to make new files, change existing questions or add more questions to existing files. The last two were added after making mistakes on long files that were difficult to edit. The author used sequential files and titled them by subject, chapter and type as selected within the program. For example, a file for drilling the people in chapter 24 of the world history text would be WH24P. Only the author had access to the file menu and after the files were written they were copied to the student's' disks. A two-drive computer was essential for this step. Files took between 15 to 30 minutes to write and five minutes to copy to student's disks. The drill questions were not taken word-for-word from the tests. Instead the cards were worded as statements that the students would identify to a person, term or date. The making of

files was an ongoing process throughout the project. Students were instructed not to work ahead so files were added as the material was taught. Some chapters had to be broken down into divisions in order to keep them from becoming too long. These were labeled A or B, such as chapter 24A or 25B.

The Target Group

During the last week of April, the author asked 15 students to participate in the project. These students met the criteria for the target group. Each one averaged below 75 percent on the three previous tests. The project was explained to them as a practicum program for the author's master's degree. No incentive, such as extra credit, was offered to the students. However, it was indicated that their participation should help their performance on tests and quizzes.

Twelve students volunteered for the project. A letter was sent home to their parents to inform them of the project, to request their support, and to ask permission for their children to stay after school or come early to use the computers. Only three parents

personally responded to the author, but none of the students were denied permission to participate. The parents who did respond were very positive.

The students were briefly instructed in the care of the computers and disks, and how to load and run the program. A batch file named DRILL was added to ease the loading process. The students were also provided an instruction sheet (Appendix D:50), but it really was not necessary. After one time through the program, almost all of the students, even those with no computer experience, could load and run the program by themselves. The only questions that consistently came up were students trying to load files that were not available, or trying to load a file without a disk in the computer. The author added error lines to resolve these problems and that seemed to work successfully. Each of the students were also given a record sheet for keeping track of their time and scores (Appendix E:53). These were kept in the computer room.

The Implementation of the Program

After three days of instruction in their new units, The students began to work with the program.

They were asked to use it two or three times each week for the rest of the unit which would be last two and a half more weeks. Most of the students complied with no hassle, some had to be encouraged a little more and a couple of the students only worked with the computers two or three times the whole first unit. Since the program was voluntary and many of the students had commitments, such as baseball, softball, track and choir, not much could be done about this problem. Three students took the program home on disk and used it faithfully. A separate disk using GW-BASIC instead of Tandy BASIC was made in order for these students to be able to use the program.

The students were asked to do one file until they scored at least a 75 percent on that file. Most of the students did much better than that in the 20 to 30 minutes that was recommended for one file. There were two students who nearly always took longer than 30 minutes to score better than 75 percent, but they seemed intent on succeeding and were allowed to work at their own pace. The computer teacher or the author supervised nearly every afternoon for about one hour after school and there were at least two or three

students there each day although Tuesday, Wednesday and Thursday were the peak days. The lab was also opened at 7:45 each morning and some students used it then. Two other students used the computers during their study hall because there were some computers available.

The students charted their time and scores on the record sheets and these were periodically checked by the author. Some of the students were encouraged to work on specific chapters or types that they were having trouble with. The author also gave verbal encouragement and extra help to those students who were struggling with some of the questions. Quizzes given in class and review time were also used to monitor the progress of students and special help or suggestions were used to keep the students involved with the program. Nearly all of the students worked on the computer the day before the test in their class.

After the three week unit was completed, the students took their usual curriculum tests. All but one of the target group passed the test in their subject. Four other students, however, scored below 75 percentile. These five students were asked to do the program at least one additional time each week during

the second unit, and work to achieve at least a score of 85 percent on each file for the next unit test. One couple who had been doing the program together were asked to work separately because they were studying each other more than the questions and both scored below 75 percent. The other students were asked to continue what they had done previously. Most of the students again did as they were asked. One student who had scored well on the test decided not to participate during the second unit. Another student who had not been able to use the computer because of baseball practice began to work on the program.

During both units other students beside the target group participated. Several "C" level students used the drill cards during the first unit. The word began to spread and during the second unit twelve students who did not meet the target group standards asked to use the program. They were allowed to use it as often as they liked, and there were as many as 14 students using the computer lab at one time. Several of these students also asked for disks to take home and indicated that they used the program to help prepare for their test. The author felt that the program was

worthwhile and that the students were involved enough that the review sheets the students were given for their final exams were made into files for the drill cards. Over 25 students used the final exam review cards to prepare for their exams in history or government. Their grades seemed to indicate some benefit to using the drill program.

After the second test was taken the last week of May, the test scores of the target group were again compared with the previous quarter and the observations from review time participation were organized into data for evaluation. During the second unit, no one using the program failed the test and only three were under 75 percent. Two of those three were from the group that failed to score above 75 percent on the first unit test. Neither of them used the drill program as often as they had been asked.

The students seemed to enjoy using the program. One ninth grader asked if there were files to cover all of next year, and seemed disappointed when told that there were not. Another student was excited at seeing one's name in context with a history score of over 90 percent. Even those students who did not participate

as much as they had been asked to seemed to enjoy the program. They just did not like staying after school to use it. Unfortunately, there was not anything that could be done about that during this implementation.

CHAPTER IV

Results

The author had two objectives to be obtained in this practicum. One, that the student's who had averaged below 75 percent on previous tests would increase their performance skills in order to raise their test scores to above 75 percent. Secondly, that those students would also voluntarily answer during review, participate in class games and discussions and respond correctly when called on by the teacher. The author felt that both of those objectives were achieved in part, but not to the degree that had been anticipated. It was hoped that the program would offer more definite proof that CAI drill and practice is an effective means to propel students past the lower levels of Bloom's taxonomy. However, in reviewing the results of the project, one would have to agree with the research that this result is not a sure thing.

There was improvement in the student's performance, both in class review and on tests. However, there was not as much improvement as hoped for. Nine

of the students showed an increase in review time participation. They raised their hands to volunteer answers, some for the first time all year. One of the students, a cheerleader, became very excited when they answered a question correctly during a review game quicker than the class's top student. Class review time was much easier because more students participated and knew the answers, and review games were more competitive. One student commented that this was the first time that the student knew all the questions that were asked during review. Another student who never answered correctly, once even missing the date of the '72 Olympics, was able to answer correctly when called on. These students would listen more carefully and would ask questions when they did not understand, something virtually none of them did previously.

Three of the 12 students in the target group showed no improvement in review time performance. They did not participate in voluntary review situations. When called on to answer a question, they either did not know the answer at all or confused the correct answer with something else they studied. One student consistently would hesitate and state, "Oh . . . I know

this . . . I remember seeing it. . . ." As soon as the correct answer was given or even a clue to the answer, the student would say he knew it. For those three students, the program seemed almost totally ineffective on their performance skills in review time.

The results on test performance were also mixed. All of the students showed improvement, but not as much as anticipated. With the use of the drill card program, no one was to score below 75 percent on the unit tests. However, five students scored below 75 percent on the first test and three on the second. On the first test one student scored as low as 60 percent. That student had scored a 50 and 55 percent on the previous two tests and did not use the program as much as asked. Perhaps the student would have done better if the CAI had been used as intended.

Table I lists the student's test scores and performance improvement. This table shows that every student did improve, but not all of them achieved the objective goal. Some of those students did not use the program as much as they were suppose to. This may have been the reason for their lack of achievement. Other students, however, did try hard without the results

anticipated. One student, Student E, did the program three or four times each week and still did not improve that much. This would, perhaps, add support to Ehman and Glenn's argument that students may reach a level of learning where they will not improve (1987).

Table I
A comparison of student's unit test scores during the practicum with their scores from the previous quarter

Student	Previous Avg.	Unit 1	Unit 2	Change(a)
A*	63	66	68	+ 5
B*	50	84	65	+34
C	66	94	92	+28
D*	59	86	95	+36
E	64	68	80	+16
F	71	72	83	+12
G*	54	85	56(b)	+31
H*	47	83	85	+38
I	59	60	73	+14
J*	59	85	89	+30
K	61	66	76	+15
L*	54	80	98	+44
M	72	74(b)	93	+21

(a) Maximum increase from average to highest score
(b) Did not use drill cards during this unit
* Student failed all three previous tests

Another indication that the program did work was the results from the United States history exam. The average on the test of the 11 students who used the drill card program was 93 percent. This included four

students who were in the target group. The average of the 12 students who did not use the drill program was 74 percent. There were only two students who were in the target group who did not use the drill card program for the exam. The lowest grade of those using the cards was 80 percent. The lowest score for those who did not was 53 percent, a 27 point difference. All of these students had the same review sheets and classroom review.

The author concluded that the CAI drill card program was a beneficial and worthwhile project to use in a knowledge based curriculum. The students who used it enjoyed the program. They were motivated to study for history tests more than they had ever been before. The program helped narrow material down that the student's needed to study so the volume of information was not so overwhelming for the student who had difficulty with rote memorization of facts. One parent thanked the author and stated that her child said it was the first time that the child had understood the tests. Another student was so excited with the test score that the student called home to tell the parents. Review time showed some retention of the material past

the test date. Only two of the 13 in the target group expressed boredom or frustration with the program.

The program did work, but the degree to which it was beneficial is perhaps questionable. CAI drill and practice is certainly not a panacea for all classroom learning problems. In the author's situation it was a positive answer to a difficult problem: having too many different subjects with too many underachieving students who needed individual help.

CHAPTER V

Recommendations

The CAI Program

The author would recommend several changes to the computer program itself. The first would be to include the use of sound in the program. As it is written, the program is completely silent. This was done, for the most part, because the author did not have much experience with programming sound. However, now that the author understands programming sound better and has seen the effectiveness of sound in other programs, sound would be added to enhance the program.

Another change recommended for the program would be to include more motivational techniques. Part of this could be the use of sound, but other things should also be added. More use of color, rewarding for a score increase when a set drill cards is repeated, some type of game option when a mastery level is reached could all be used to increase the student's interest.

A third change that the author would recommend was suggested by two of the student's who used the program.

They asked if there was a way to allow them to review only the questions that they had missed. It is a good idea especially for the longer files of twenty or more questions. The students could work only on the questions that they had missed, master them and then review the whole file. This could be effective when the students consistently miss the same questions again and again.

The Implementation

The implementation went as well as possible considering the lack of computers for use during school hours. If computers are made available in the classrooms next year, and they may be, then implementation would be changed so that the program would become part of class review. Low level students could work on the drill cards during class study time or other activities. Care would have to be taken not to single the students out as "dumb" or "odd", but most high school students know the students whose performance level is low. Another change to the implementation may be the addition of some extra credit as further incentive for student participation.

Further Use

Although no definite plans have been made or time table constructed, this program can be a versatile drill method for nearly any course that is knowledge oriented. The program has been made available for the history teachers at the author's school and it seems that some may use it even in the lower grades (fifth grade-eighth grade). The program was also given to several students who were shown how to add their own files. They said they would use it, but seeing is believing in those types of situations.

With some modification or alteration, the program could be used with other courses such as science or literature. However, at present only a person with experience in BASIC programming could make those changes. If the author has time, the program will be modified to have a set up menu allowing any teacher with no programming experience to construct the menu and files for their subjects. The author would also like to rewrite the program for use on APPLE computers which would expand its versatility in the school.

References

Alper, Lynne, and Holmberg, Meg. Parents, Kids, and Computers. Berkeley: SYBEX, 1984.

Bailey, Steve. "Using the Computer in Middle School Social Studies," The Social Studies, January/February 1987, pp.23-25.

Becker, Henry Jay. "The Impact of Computer Use on Children's Learning: What Research Has Shown and What It Has Not." Paper presented at the Annual Meetings of the American Educational Research Association, 1987. Eric ED 287 458.

Budin, Howard, Taylor, Robert, and Kendall, Diane. "Computers and Social Studies: Trends and Directions," The Social Studies, January/February 1987, pp.7-12.

Bulkeley, William M. "Computers Failing as Teaching Aids," The Social Studies, May/June 1988, p.115.

Cohen, Mollie L. "Computer Corner," Social Education, October 1983, pp.458-59.

Ediger, Marlow. "Philosophy of Computer Use in the Social Studies." Eric ED 307 206.

Ehman, Lee H., and Glenn, Allen D. "Computer-Based Education in the Social Studies." ERIC Clearinghouse for Social Studies/Social Science Education, 1987.

Flouris, George. "Developing Appropriate Designs for Instructional Computer Programs in the Social Studies," The Social Studies, January/February 1987, pp.17-22.

Lineweaver, David R. "Using the Computer in the Social Studies Classroom," The Quarterly: A Newsletter to Update Resources for Teaching Virginia Government, May, 1988, pp. 5-6. ERIC ED 300 291.

Mager, Robert F. Developing Attitude Toward Learning. Belmont, California: Fearon Pitman, 1968.

Marsh, Merle. "Teaching History with Microcomputers: A Case Study," Social Education, February 1986, pp. 134-35.

Rooze, Gene E. "Integrating Computer Software Into Social Studies Instruction." Paper presented to the National Council for the Social Studies Convention, 1983. ERIC ED 239 586.

Ross, E. Wayne. "Survey of Microcomputer Use in Secondary Social Studies Classrooms." Paper presented at the annual meeting of the National Council for the Social Studies, 1988. ERIC ED 306 169.

Schug, Mark C. "What do Social Studies Teachers Say about Using Computers?" The Social Studies, May/June 1988, pp. 112-15.

Appendices

Appendix A

Ehman and Glenn's Questions About Computer Related Activities

Appendix A

The following is an excerpt from Ehman and Glenn's paper, "Computer-Based Education in the Social Studies" (1987).

Instructional Effectiveness. Four key questions can be asked in this area.

1. Did the computer materials help the students achieve the lesson's objectives?
2. Did the computer materials accommodate a range of student abilities?
3. Did the computer materials keep the students interest?
4. Did the computer materials contribute to the lesson's effectiveness?

Classroom Management. . . the following questions will help one reflect on management issues.

1. Did the grouping arrangement work?
2. Did the strategy used to monitor student progress work effectively?
3. Was there sufficient time for the students to complete . . . activities?
4. Were the students able to work together effectively?

Software. . . a few questions are still needed to check to see if the software contributed to the overall success of the lesson.

1. Did the software run without any problems?
2. Was there enough software to meet the instructional needs for the number of students in the class?
3. Did the software use the power of the computer . . . ?

Hardware. . . .

1. Were there enough computers?
2. What technical problems occurred that should be corrected . . . ?
3. What additional hardware might make the lesson more successful?

Appendix B

List of Files Available to the Students
During Each Unit of Study

Appendix B

Files Available For First Unit

Government	World History	United States History
Chapter 11A Type: Terms	Chapter 24B Type: People	Chapter 29 Type: People
Chapter 11B Type: Terms	Chapter 24B Type: Terms	Chapter 29 Type: Terms
Chapter 11 Type: People	Chapter 25A Type: People	Chapter 30A Type: People
Chapter 12A Type: Terms	Chapter 25A Type: Terms	Chapter 30A Type: Terms
Chapter 12B Type: Terms	Chapter 25B Type: People	Chapter 30B Type: People
	Chapter 25B Type: Terms	Chapter 30B Type: Terms
	Chapter 25 Type: Dates	Chapter 30 Type: Dates

Files Available for Second Unit

Chapter 14 Type: People	Chapter 26A Type: People	Chapter 31A Type: People
Chapter 14 Type: Terms	Chapter 26A Type: Terms	Chapter 31A Type: Terms
Chapter 15 Type: People	Chapter 26B Type: People	Chapter 31B Type: People
Chapter 15 Type: Terms	Chapter 26B Type: Terms	Chapter 31B Type: Terms
		Chapter 31 Type: Dates

Appendix C

A Screen Display from the CAI Drill Program
Showing the Question and Answer Segment

Appendix C

Screen Display from the Question and Answer Segment

```
┌──────────────────────────────────────────────────────────┐
│  CARD # 10 OUT OF 11                                     │
│                                                          │
│  SAID "NEVER IN THE FIELD OF HUMAN CONFLICT WAS SO       │
│  MUCH OWED BY SO MANY TO SO FEW"?                        │
│                                                          │
│                                                          │
│                                                          │
└──────────────────────────────────────────────────────────┘
```

AFTER YOU HAVE ANSWERED THE QUESTION (MENTALLY), PRESS ANY KEY TO SEE THE ANSWER.

```
┌──────────────────────────────────────────────────────────┐
│                                                          │
│                                                          │
│                        CHURCHILL                         │
│                                                          │
│                                                          │
│                                                          │
└──────────────────────────────────────────────────────────┘
```

WAS YOUR RESPONSE CORRECT (C) OR INCORRECT (I)?

Appendix D

Instructions for the Drill Card Program

Appendix D

DRILL CARD INSTRUCTIONS

In order to achieve full effectiveness and to record accurate results, you must do the drill cards at least twice and preferably three times each week. Do the cards from chapters that we are presently studying or have recently finished. Do not try to work ahead because it will probably be frustrating to try drilling on things we have not studied. Also, do not think that the drill cards should be your only studying. You should still study as you normally would for a test or quiz.

Instructions for loading the program:

1) If the computer is off: put the disk in drive A and turn on the computer and monitor. The program loads itself.
2) If the computer is on: put the disk in drive A and type **drill**. Then press <Enter>.
3) If the computer screen has a B:> on it: type **A:** press <Enter>. Then type **drill** and press <Enter>.

Instructions for running the program:

1) At the main menu select your class by typing the number corresponding to your class.
2) Next, chose the chapter to drill, type in the number and press <Enter>. Then select either people, terms or dates. Not all the chapters have all three types.
3) When the drill cards come up follow the directions that are given. Remember to be honest when telling the computer if you were correct or incorrect on each question.
4) After you finish the set of cards, you will be given your score. If it was below 75%, do the same set again.

Instructions for recording your work:

1) After you finish with the program, find your record sheet in the folder on the counter.
2) Record the date, each file you drilled, how many times you did that file, the maximum score you received, and how much time you spent.
3) Place the sheet back in the folder.

Please be accurate with your record keeping. The program is to benefit you, but I need good records to see if it works or not. Thank you and let's all shoot for A's.

Appendix E

Student's Record Sheet for Drill Scores

Appendix E

COMPUTER TIME RECORD SHEET
FOR HISTORY DRILL CARDS

NAME:_____

SCORE RECEIVED ON UNIT TEST_____

AVERAGE SCORE LAST QUARTER_____

DATE	CHAPTER	TIMES	MINUTES	MAX SCORE

Attachments

```
10 '*****************************************
11 '*          SAVED AS DC                  *
12 '*                                       *
13 '*          Written by                   *
14 '*        Gary Roedding                  *
15 '*                                       *
16 '*    This program was used in           *
17 '*     a Practicum Project for           *
18 '*        Nova University                *
19 '*         April, 1990                   *
20 '*                                       *
21 '*           MS-DOS                      *
22 '*****************************************
23 '
25 DIM Q$(51),A$(51)
26 WIDTH 80:SCREEN 0,0,0
27 KEY OFF
28 COLOR 0,1,7
29 RANDOMIZE VAL(RIGHT$(TIME$,2))
30 '====VARIABLE LIST====
31 '    C        WILL BE USED AS A COUNTER
32 '    I        WILL BE USED AS A COUNTER
33 '    J        WILL BE USED AS A COUNTER
34 '    NUMQUE   WILL BE USED FOR THE NUMBER OF QUESTIONS
35 '    R        WILL BE USED AS A RANDOM NUMBER GENERATOR
36 '    T        WILL BE USED IN TIME LOOPS
37 '    X        WILL BE USED AS A COUNTER
38 '    Y        WILL BE USED AS A COUNTER
39 '    A$(X)    WILL BE USED FOR THE ANSWERS
40 '    CH$      WILL BE USED FOR THE CHAPTER
41 '    FILE$    WILL BE USED FOR THE FILE NAME
43 '    MENU$    WILL BE USED FOR MENU SELECTIONS
44 '    N$       WILL BE USED FOR STUDENTS NAME
45 '    PS$      WILL BE USED IN PAGE STOPS
46 '    Q$(X)    WILL BE USED FOR QUESTIONS
47 '    R$       WILL BE USED FOR RESPONSES TO QUERIES
48 '    SU$      WILL BE USED FOR THE SUBJECT
49 '    T$       WILL BE USED FOR MENU TITLES
50 '    TITLE$   WILL BE USED FOR MENU TITLES
51 '    TY$      WILL BE USED FOR THE TYPE OF QUESTIONS
70 ON ERROR GOTO 4000
99 '
100 '====TITLE PAGE AND MENU====
120 CLS:LOCATE 12,23:TITLE$="  H I S T O R Y   T R I V I A  ":GOSUB 3000 :   'PR
INT TITLE
130 PRINT:PRINT TAB(34):COLOR 7:PRINT"DRILL CARDS":COLOR 0,1,7
140 LOCATE 21,2:PRINT"THIS PROGRAM IS DESIGNED TO HELP YOU DRILL FOR HISTORY QUI
ZZES OR TESTS."
150 FOR T=1 TO 1000*5:NEXT
160 CLS:LOCATE 3,29:TITLE$="  M A I N   M E N U  ":GOSUB 3000:  'PRINT TITLE
170 PRINT:PRINT TAB(24)"1)    GOVERNMENT (9TH GRADE)"
175 PRINT:PRINT TAB(24)"2)    WORLD HISTORY (10TH GRADE)"
180 PRINT:PRINT TAB(24)"3)    UNITED STATES HISTORY (11TH GRADE)"
185 PRINT:PRINT TAB(24)"9)    QUIT"
190 PRINT:PRINT:PRINT TAB(24)"A)    TO ADD A NEW FILE"
195 PRINT:PRINT TAB(24)"B)    TO CHANGE A FILE"
200 PRINT:PRINT TAB(24)"C)    TO ADD QUESTIONS TO A FILE"
210 LOCATE 23,5:PRINT"CHOOSE A NUMBER FOR YOUR SELECTION."
220 MENU$=INKEY$:IF MENU$="" THEN 220
230 IF MENU$="9" THEN 3030
240 IF MENU$="A" THEN 10000: 'TO ADD FILES, FOR TEACHER ONLY
245 IF MENU$="B" THEN 15000: 'TO CHANGE FILES, FOR TEACHER ONLY
247 IF MENU$="C" THEN 20000:  'TO ADD QUESTIONS TO AN EXISTING FILE
250 IF MENU$<"1" OR MENU$>"3" THEN 210
```

BEST COPY AVAILABLE

```
260 MENU=VAL(MENU$)
270 IF MENU=1 THEN TITLE$="  G O V E R N M E N T  ":SU$="GV"
280 IF MENU=2 THEN TITLE$="  W O R L D   H I S T O R Y  ":SU$="WH"
290 IF MENU=3 THEN TITLE$="  U N I T E D   S T A T E S   H I S T O R Y  ":SU$="U
S"
299 '
500 CLS:LOCATE 6,40-LEN(TITLE$)/2:GOSUB 3000: 'PRINT SUBMENU TITLE
510 LOCATE 9,4:INPUT "CHOOSE THE CHAPTER THAT YOU WISH TO DRILL. ";CH$
515 IF VAL(CH$)<1 OR VAL(CH$)>32 THEN PRINT "PLEASE CHOOSE A PROPER CHAPTER.":GO
TO 510
520 LOCATE 11,4:PRINT "INDICATE WHICH CATEGORY YOU WISH TO DRILL:  (P)eople, (T)
erms, or (D)ates. ";
530 TY$=INKEY$:IF TY$="" THEN 530
532 IF TY$="P" OR TY$="T" OR TY$="D" THEN 540
533 IF TY$="p" OR TY$="t" OR TY$="d" THEN LOCATE 13,4:PRINT"PLEASE BE SURE THE C
APS KEY IS ON, THEN SELECT THE CATEGORY.": GOTO 520
535 GOTO 520
540 FILE$=SU$+CH$+TY$
599 '
1000 ' ==== LOAD QUESTIONS FROM FILE ====
1005 NUMQUE=0
1010 CLS:PRINT:PRINT"NOW LOADING QUESTIONS
1020 OPEN "I",1,FILE$
1030 IF EOF(1) THEN 1090
1040 NUMQUE=NUMQUE+1
1050 INPUT #1,Q$(NUMQUE)
1060 INPUT #1,A$(NUMQUE)
1070 GOTO 1030
1090 CLOSE
1100 GOTO 1210
1105 '
1110 '====SUBROUTINE TO SHUFFLE QUESTIONS====
1120 CLS:PRINT:PRINT"SHUFFLING QUESTIONS AND ANSWERS . . . STAND BY"
1130 FOR X=NUMQUE TO 1 STEP -1
1140 R=INT(RND(1)*X)+1
1150 T$=Q$(R):Q$(R)=Q$(X):Q$(X)=T$
1160 T$=A$(R):A$(R)=A$(X):A$(X)=T$
1170 NEXT X
1180 FOR T=1 TO 1000*2:NEXT T
1190 CLS:RETURN
1200 '
1210 '==== DRILL CARD INSTRUCTIONS ====
1220 CLS:LOCATE 8,40-LEN(TITLE$)/2:GOSUB 3000
1230 LOCATE 9,29:COLOR 7:PRINT" D R I L L  C A R D S ":COLOR 0,1,7
1240 LOCATE 12,2:PRINT"THERE ARE";NUMQUE;"DRILL CARDS CONTAINED IN THIS FILE.  A
 QUESTION WILL APPEAR"
1250 PRINT:PRINT TAB(2)"ON THE SCREEN.";:COLOR 14:PRINT"  MENTALLY";:COLOR 0:PRI
NT" ANSWER THE QUESTION THEN PRESS ANY KEY AND THE"
1260 PRINT:PRINT TAB(2)"ANSWER TO THE QUESTION WILL APPEAR.  IF YOUR ANSWER WAS
CORRECT, PRESS"
1280 PRINT:COLOR 14:PRINT TAB(2)"C ";:COLOR 0:PRINT"FOR CORRECT; IF INCORRECT, P
RESS ";:COLOR 14:PRINT"I";:COLOR 0:PRINT" FOR INCORRECT.  AT THE END OF THE"
1290 PRINT:PRINT TAB(2)"CARDS, YOU WILL FIND OUT HOW YOU WOULD HAVE DONE IF THIS
 HAD BEEN A QUIZ.":COLOR 0,1,7
1310 GOSUB 6000
1330 CLS
1340 PRINT:INPUT "PLEASE ENTER YOUR NAME";N$
1350 IF LEN(N$)>20 THEN PRINT"TOO LONG":GOTO 1340
1360 FOR X=1 TO LEN(N$)
1370 IF ASC(MID$(N$,X,1))<65 AND ASC(MID$(N$,X,1))<>32 THEN PRINT"INVALID ENTRY"
:GOTO 1340
1380 NEXT X
1390 LOCATE 12,3:PRINT"***REMEMBER TO PRESS ";:COLOR 14:PRINT"C ";:COLOR 0:PRINT
"OR ";:COLOR 14:PRINT"I ";:COLOR 0:PRINT"IF YOU ANSWERED CORRECT OR INCORRECT.**
*":COLOR 0,1,7
1400 GOSUB 6000
```

BEST COPY AVAILABLE

```
1410 CLS: GOSUB 1110
1499 '
1500 '====PROCEDURE TO DRAW A BOX====
1505 LOCATE 2
1510 I=I+1
1520 PRINT TAB(10);
1530 FOR J=1 TO 60:PRINT"-";:NEXT J:PRINT
1540 FOR J=1 TO 7
1550 PRINT TAB(10)"¦";:PRINT TAB(69)"¦" 'FOR Y=2 TO 59:PRINT" ";:NEXT Y:PRINT"¦"
1560 NEXT J
1570 PRINT TAB(10);
1580 FOR J=1 TO 60:PRINT"-";:NEXT J:PRINT:IF I=2 THEN 1600
1590 LOCATE 15:GOTO 1510
1600 I=0
1699 '
1700 '====QUESTION ROUTINE====
1730 FOR X=1 TO NUMQUE
1740 LOCATE 3,12:PRINT"CARD #";X;"OUT OF";NUMQUE
1750 IF LEN(Q$(X))>56 THEN GOTO 1790
1760 LOCATE 5,12:COLOR 7:PRINT Q$(X):COLOR 0,1,7
1770 LOCATE 12,10:PRINT"AFTER YOU HAVE ANSWERED THE QUESTION -(MENTALLY), PRESS A
NY ":LOCATE 13,10:PRINT"KEY TO SEE THE ANSWER."
1775 PS$=INKEY$:IF PS$="" THEN 1775
1780 GOTO 1850
1790 FOR Y=57 TO 45 STEP -1
1800 IF MID$(Q$(X),Y,1)=" "THEN 1820
1810 NEXT Y
1820 LOCATE 5,12:COLOR 7:PRINT LEFT$(Q$(X),Y):COLOR 0,1,7
1830 LOCATE 6,12:COLOR 7:PRINT RIGHT$(Q$(X),LEN(Q$(X))-Y):COLOR 0,1,7
1840 GOTO 1770
1850 LOCATE 19,40-LEN(A$(X))/2:COLOR 7:PRINT A$(X):COLOR 0,1,7
1860 LOCATE 24,10:PRINT"WAS YOUR RESPONSE CORRECT (C) OR INCORRECT (I)";
1870 R$=INKEY$:IF R$="" THEN 1870
1880 IF R$="C" THEN C=C+1:GOTO 1910
1890 IF R$="I" THEN GOTO 1910
1900 GOTO 1870
1910 IF X=NUMQUE THEN 2000
1920 LOCATE 5,12:FOR J=1 TO 56:PRINT" ";:NEXT
1930 LOCATE 6,12:FOR J=1 TO 56:PRINT" ";:NEXT
1940 LOCATE 19,12:FOR J=1 TO 56:PRINT" ";:NEXT
1960 NEXT X
1999 '
2000 '==== FINAL DISPLAY ====
2010 CLS
2020 IF C>NUMQUE*.9 THEN GOTO 2110
2030 LOCATE 2,2:PRINT N$
2040 LOCATE 4,3:PRINT"YOU HAVE FINISHED ONE SET OF DRILL CARDS.  OUT OF THE";NUM
QUE;"CARDS YOU HAD "
2050 LOCATE 6,2:PRINT C;"CORRECT.  IF THIS HAD BEEN A QUIZ, YOU WOULD HAVE SCORE
D A(N)";INT(C*(100/NUMQUE)+.5);"%."
2060 LOCATE 22,2:PRINT"DO YOU WISH TO DO THIS SET OVER AGAIN (Y/N)?";
2070 R$=INKEY$:IF R$="" THEN 2070
2080 IF R$="Y" THEN C=0:COLOR 0,1,7:GOTO 1410
2090 IF R$="N" THEN C=0:COLOR 0,1,7:GOTO 160
2100 PRINT:PRINT" ;RESS EITHER 'Y' OR 'N'":GOTO 2060
2110 FOR J=1 TO 2
2120 CLS:LOCATE 12,32:COLOR 14,4:PRINT" G R E A T ! ! ":FOR T=1 TO 500:NEXT T
2130 CLS:LOCATE 12,32:COLOR 7,1:PRINT" G R E A T ! ! ":FOR T=1 TO 500:NEXT T
2140 NEXT J
2150 CLS:GOTO 2030
2199 '
3000 '=====SUBROUTINE TO CHANGE COLOR ON TITLE=====
3010 COLOR 14,4:PRINT TITLE$:COLOR 0,1,7
3020 RETURN
3030 '===END ROUTINE===
3040 KEY ON
```


BEST COPY AVAILABLE

```
3050 COLOR 7,0,0
3060 CLS
3070 SYSTEM
3080 END
3099 '
4000 '====ERROR ROUTINES====
4010 IF ERR=53 THEN PRINT:PRINT TAB(4) "THAT FILE IS NOT YET AVAILABLE.":PRINT T
AB(4)"PLEASE TRY ANOTHER ONE.":GOSUB 6000:RESUME 160
4020 IF ERR=71 THEN PRINT:PRINT"CHECK TO SEE IF DISK IS IN DRIVE A, AND DISK DOO
R IS SHUT.":GOSUB 6000:RESUME 1000
4030 PRINT:PRINT"THERE SEEMS TO BE A PROBLEM.  PLEASE ADVISE YOUR TEACHER OR TRY
 AGAIN."
4040 GOSUB 6000:RESUME 160
4999 '
5000 '====SUBROUTINE FOR MENU====
5010 PRINT:PRINT TAB(24)"1)    GOVERNMENT (9TH GRADE)"
5020 PRINT:PRINT TAB(24)"2)    WORLD HISTORY (10TH GRADE)"
5030 PRINT:PRINT TAB(24)"3)    UNITED STATES HISTORY (11TH GRADE)"
5040 PRINT:PRINT TAB(24)"9)    QUIT"
5050 LOCATE 21,5:PRINT"CHOOSE THE SUBJECT."
5060 MENU$=INKEY$:IF MENU$="" THEN 5060
5070 IF MENU$="9" THEN 160
5080 IF MENU$<"1" OR MENU$>"4" THEN 5050
5090 IF MENU$="1" THEN SU$="GV"
5100 IF MENU$="2" THEN SU$="WH"
5110 IF MENU$="3" THEN SU$="US"
5120 CLS:LOCATE 6,2:INPUT"ENTER THE CHAPTER: ", CH$
5130 LOCATE 9,2:PRINT "INDICATE WHICH CATEGORY:  (P)eople, (T)erms, or (D)ates.
";
5140 TY$=INKEY$:IF TY$="" THEN 5140
5150 IF TY$="P" THEN 5190
5160 IF TY$="T" THEN 5190
5170 IF TY$="D" THEN 5190
5180 GOTO 5130
5190 FILE$=SU$+CH$+TY$
5200 RETURN
5999 '
6000 '====SUBROUTINE FOR PAGE STOP====
6010 LOCATE 23,2:INPUT"PRESS <ENTER> TO CONTINUE";PS$
6030 RETURN
9990 '
9995 '====TEACHER'S DISK ONLY====
9998 '
9999 '
10000 '====TO ADD A FILE====
10120 CLS:LOCATE 6,29:TITLE$="  A D D I N G   A   F I L E  ":GOSUB 3000:  'PRINT
 TITLE
10130 GOSUB 5000:  'PRINT MENU
10999 '
11000 'FILE BUILDING LOOP
11010 CLS
11020 X=1
11025 PRINT:PRINT"YOU MAY HAVE UP TO 50 DRILL CARDS UNDER FILE ";FILE$;" ."
11030 PRINT:PRINT"YOU WILL NEED TO INPUT ";:COLOR 7: PRINT"999 ";:COLOR 0,1,7:PR
INT"WHEN YOU FINISH YOUR QUESTIONS."
11040 PRINT:PRINT"#";X
11050 PRINT "QUESTION"
11060 PRINT:INPUT" ",Q$(X)
11065 IF Q$(X)="999" THEN CLS: GOTO 11100
11070 PRINT:PRINT"ANSWER"
11080 PRINT:INPUT" ",A$(X)
11090 CLS:X=X+1:GOTO 11030
11100 PRINT:INPUT "PRESS <ENTER> TO STORE FILE";PS$
11109 '
11110 'TO STORE ON FILE
11120 CLS:PRINT:PRINT"AM STORING YOUR FILE ";FILE$
```


BEST COPY AVAILABLE

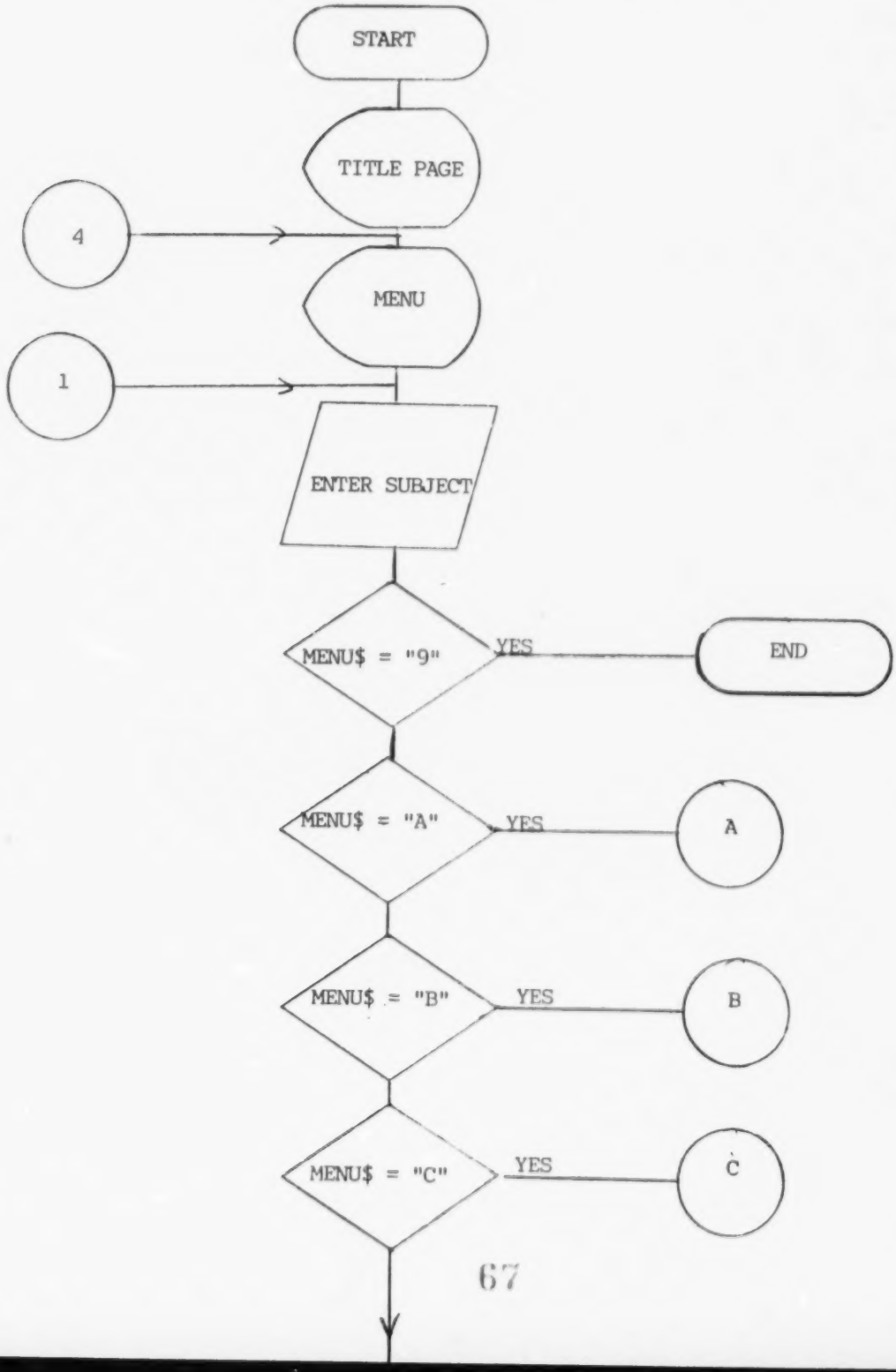
```
11130 OPEN "O",1,FILE$
11140 FOR Y=1 TO X-1
11150 PRINT #1,Q$(Y)
11160 PRINT #1,A$(Y)
11170 NEXT Y
11180 CLOSE
11190 PRINT:PRINT"DO YOU WANT TO ADD ANOTHER FILE? (Y/N)"
11200 PS$=INKEY$:IF PS$="" THEN 11200
11210 IF PS$="Y" THEN 10120
11220 IF PS$="N" THEN 160
11230 GOTO 11200
14999 '
15000 '====TO CHANGE A FILE====
15200 CLS:LOCATE 6,29:TITLE$="  C H A N G I N G   A   F I L E  ":GOSUB 3000:  'P
RINT TITLE
15210 GOSUB 5000
15410 NUMQUE=0
15430 OPEN "I",1,FILE$
15440 IF EOF(1) THEN 15490
15450 NUMQUE=NUMQUE+1
15460 INPUT #1,Q$(NUMQUE)
15470 INPUT #1,A$(NUMQUE)
15480 GOTO 15440
15490 CLOSE
15500 FOR X=1 TO NUMQUE
15510 CLS
15520 PRINT:PRINT:PRINT TAB(3)"NUMBER ";X;" OF";NUMQUE:PRINT:PRINT TAB(3)Q$(X):P
RINT:PRINT TAB(3)A$(X)
15530 PRINT:PRINT TAB(3)"IS THE QUESTION AND ANSWER CORRECT? (Y/N)"
15540 AN$=INKEY$:IF AN$="" THEN 15540
15550 IF AN$="Y" THEN GOTO 15600
15560 PRINT:PRINT TAB(20)"*****NOTE*****":PRINT TAB(3)"EVEN IF YOU ONLY CHANGE T
HE ANSWER, YOU MUST REENTER THE QUESTION."
15565 IF AN$="N" THEN PRINT:PRINT TAB(3)"PLEASE ENTER YOUR NEW STATEMENT OR QUES
TION."
15570 PRINT:INPUT "  ",Q$(X)
15580 PRINT:PRINT TAB(3)"PLEASE ENTER THE ANSWER TO THIS STATEMENT."
15590 PRINT:INPUT "  ",A$(X)
15600 NEXT
15610 PRINT:INPUT "  PRESS <ENTER> TO STORE FILE";PS$
15620 'TO STORE ON FILE
15630 CLS:PRINT:PRINT"AM STORING YOUR FILE ";FILE$
15640 OPEN "O",1,FILE$
15650 FOR Y=1 TO NUMQUE
15660 PRINT #1,Q$(Y)
15670 PRINT #1,A$(Y)
15680 NEXT Y
15690 CLOSE
15700 PRINT:PRINT"DO YOU WANT TO CHANGE ANOTHER FILE? (Y/N)"
15710 PS$=INKEY$:IF PS$="" THEN 15710
15730 IF PS$="Y" THEN 15000
15740 IF PS$="N" THEN 160
15750 GOTO 15700
19999 '
20000 '====TO ADD QUESTIONS TO AN EXISTING FILE====
20010 CLS:LOCATE 6,29:TITLE$="  A D D I N G   Q U E S T I O N S  ":GOSUB 3000:
'PRINT TITLE
20020 GOSUB 5000
20050 NUMQUE=0
20060 OPEN "I",1,FILE$
20070 IF EOF(1) THEN 20120
20080 NUMQUE=NUMQUE+1
20090 INPUT #1,Q$(NUMQUE)
20100 INPUT #1,A$(NUMQUE)
20110 GOTO 20070
20120 CLOSE
```

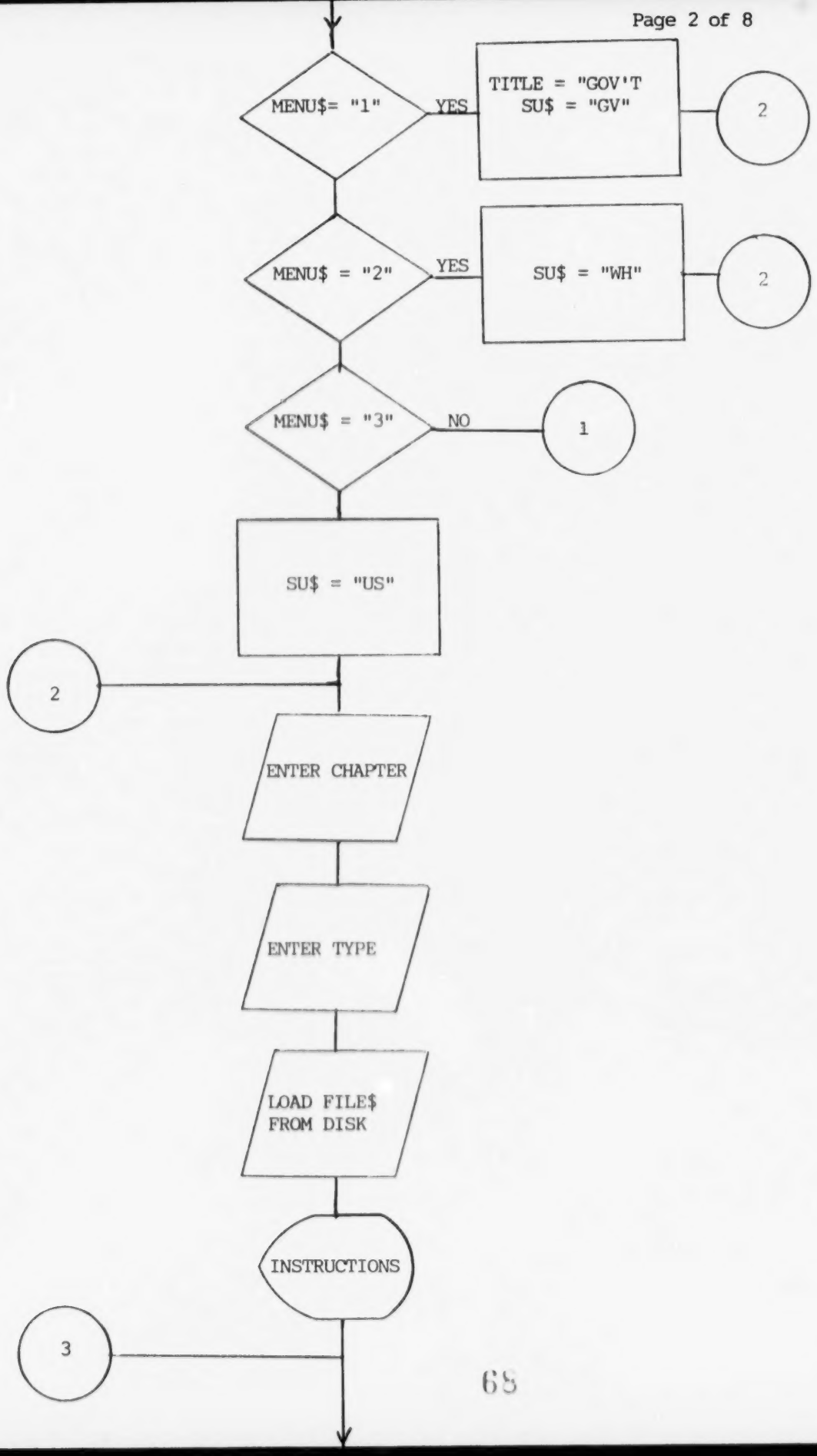

BEST COPY AVAILABLE

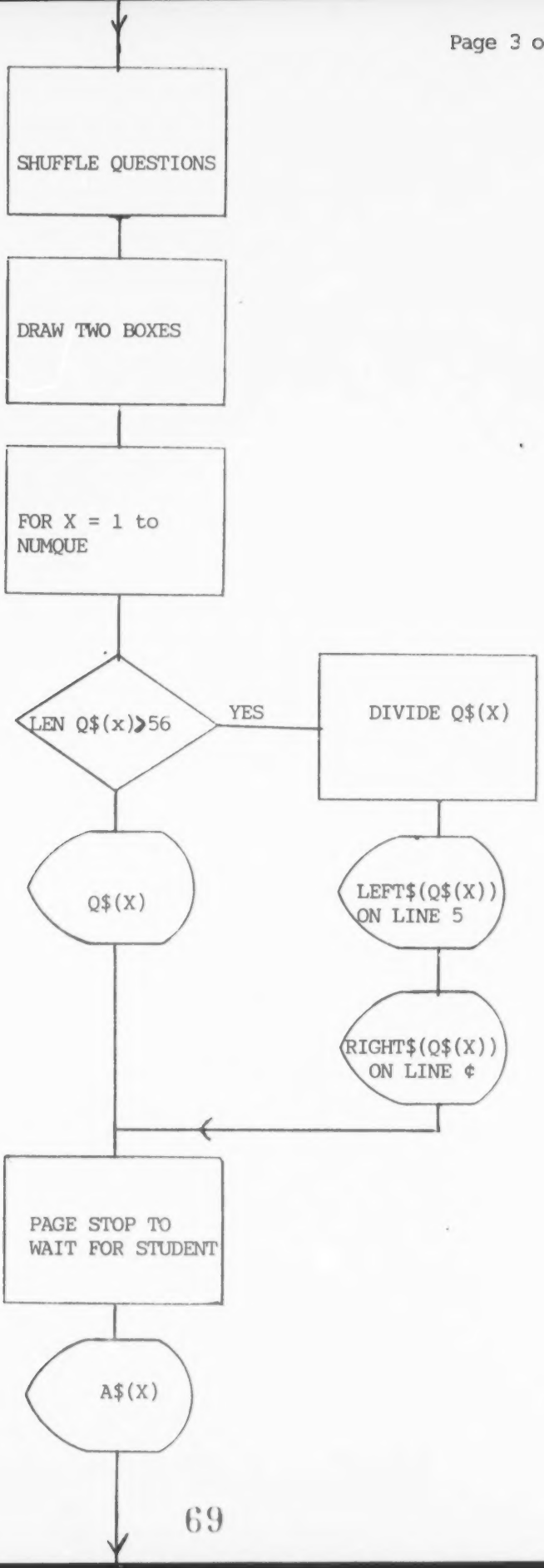
```
20125 CLS
20130 PRINT:PRINT"THIS FILE CONTAINS ";NUMQUE;"QUESTIONS.  THE FILE MAY HAVE NO
MORE THAN 50":PRINT:PRINT"QUESTIONS.  ENTER 999 AFTER THE LAST QUESTION AND ANSW
ER IS ENTERED."
20140 X=NUMQUE+1
20145 GOSUB 6000
20150 CLS:GOTO 11040
```

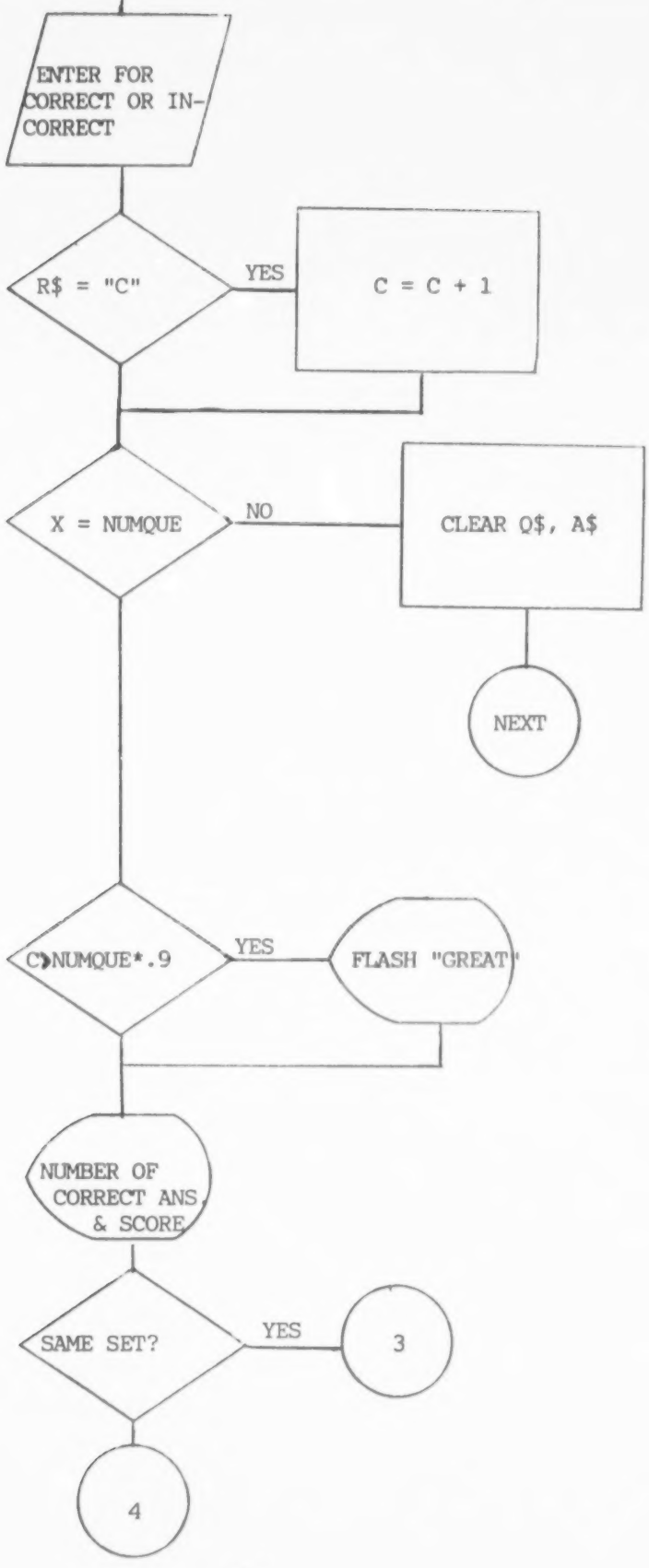

BEST COPY AVAILABLE

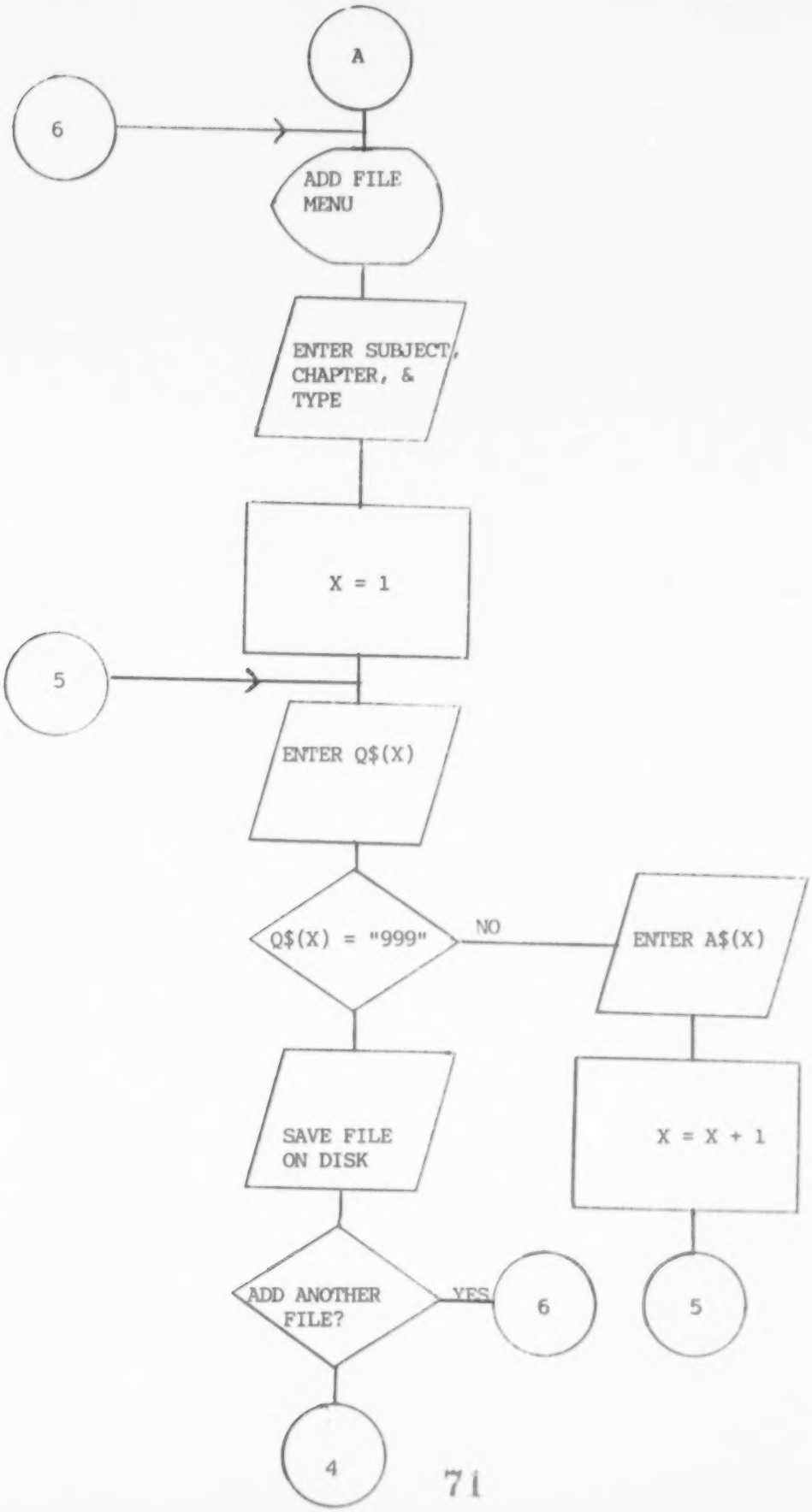
FLOWCHART FOR HISTORY TRIVIA DRILL PROGRAM

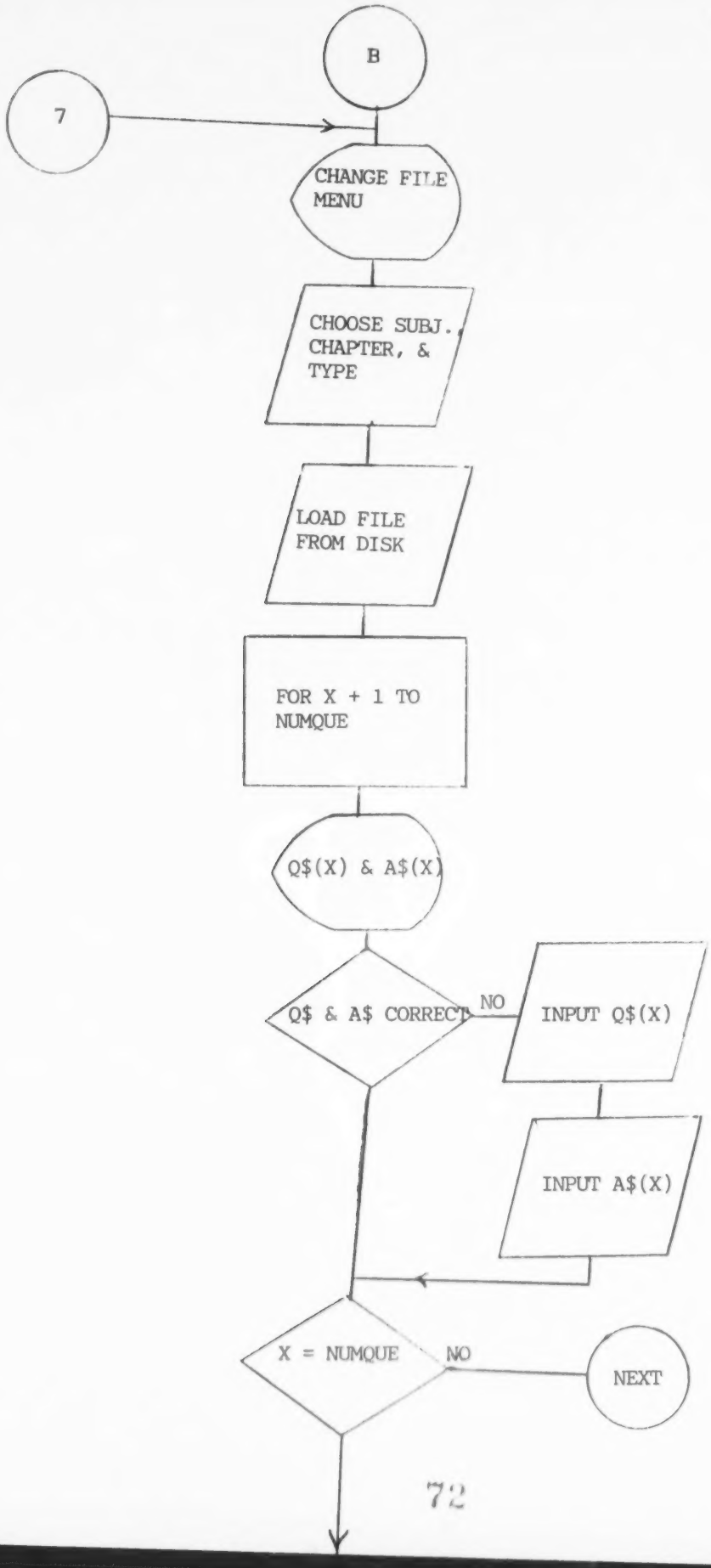


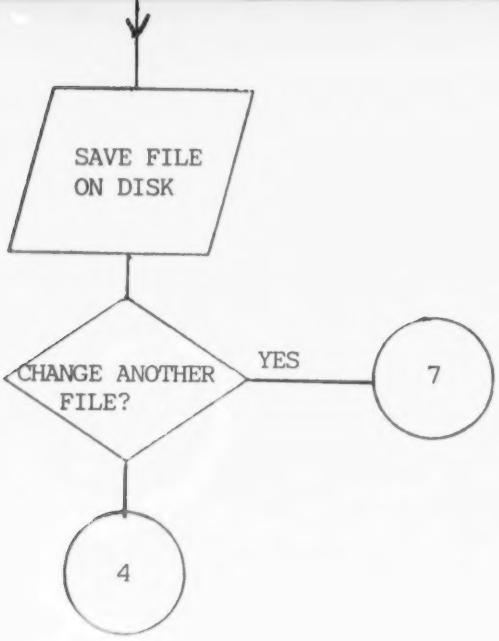

MENU$= "1"
YES
TITLE = "GOV'T
SU$ = "GV"
2
MENU$ = "2"
YES
SU$ = "WH"
2
MENU$ = "3"
NO
1
SU$ = "US"
2
ENTER CHAPTER
ENTER TYPE
LOAD FILE$
FROM DISK
INSTRUCTIONS
3

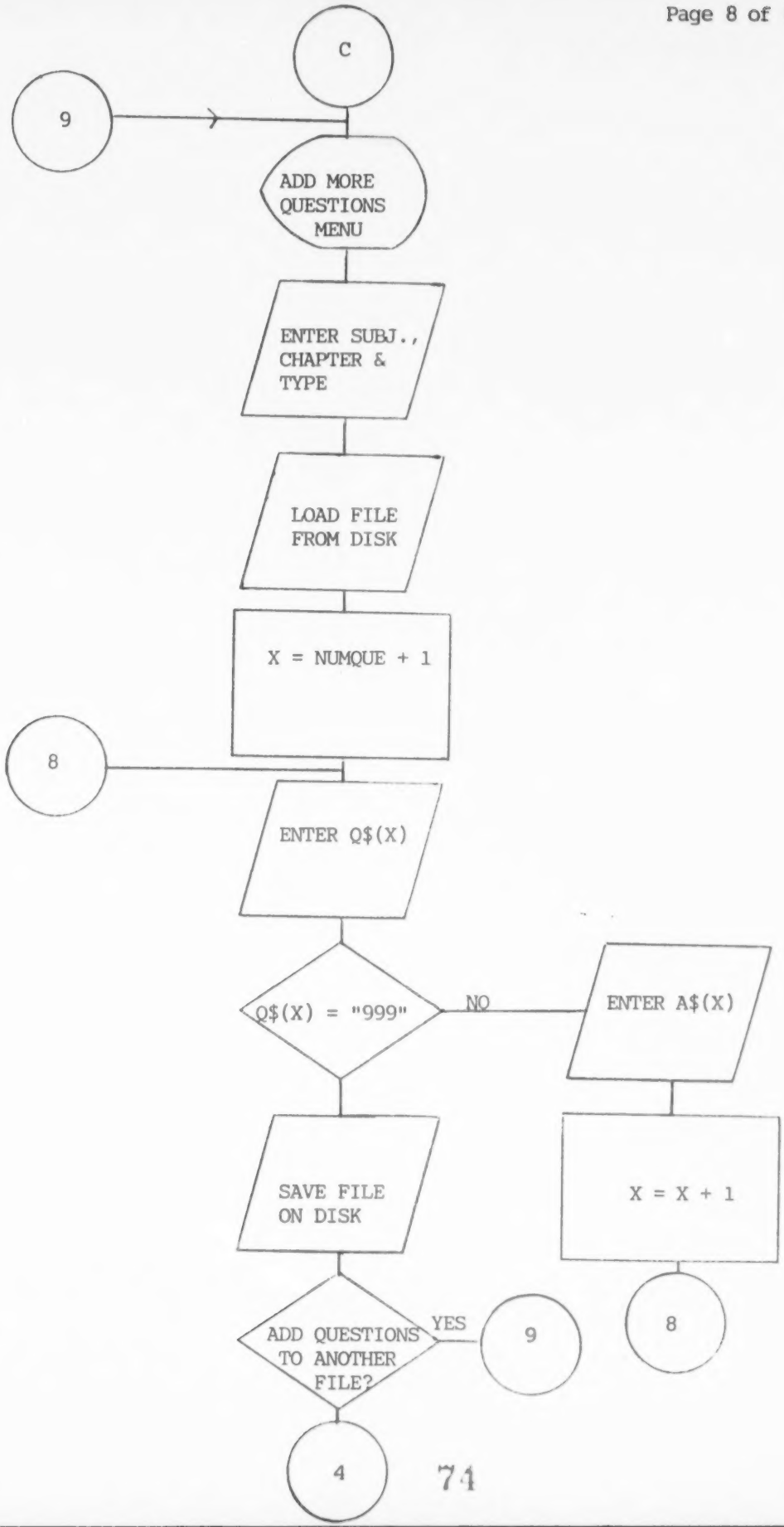

SHUFFLE QUESTIONS
DRAW TWO BOXES
FOR X = 1 to NUMQUE
LEN Q$(x)>56
YES
DIVIDE Q$(X)
Q$(X)
LEFT$(Q$(X)) ON LINE 5
RIGHT$(Q$(X)) ON LINE ¢
PAGE STOP TO WAIT FOR STUDENT
A$(X)


ENTER FOR CORRECT OR IN-CORRECT
R$ = "C"
YES
C = C + 1
X = NUMQUE
NO
CLEAR Q$, A$
NEXT
C>NUMQUE*.9
YES
FLASH "GREAT"
NUMBER OF CORRECT ANS, & SCORE
SAME SET?
YES
3
4


A
6
ADD FILE MENU
ENTER SUBJECT, CHAPTER, & TYPE
X = 1
5
ENTER Q$(X)
Q$(X) = "999"
NO
ENTER A$(X)
SAVE FILE ON DISK
X = X + 1
ADD ANOTHER FILE?
YES
6
5
4


B
7
CHANGE FILE MENU
CHOOSE SUBJ. CHAPTER, & TYPE
LOAD FILE FROM DISK
FOR X + 1 TO NUMQUE
Q$(X) & A$(X)
Q$ & A$ CORRECT
NO
INPUT Q$(X)
INPUT A$(X)
X = NUMQUE
NO
NEXT


SAVE FILE
ON DISK
CHANGE ANOTHER
FILE?
YES
7
4


C
9
ADD MORE QUESTIONS MENU
ENTER SUBJ., CHAPTER & TYPE
LOAD FILE FROM DISK
X = NUMQUE + 1
8
ENTER Q$(X)
Q$(X) = "999"
NO
ENTER A$(X)
SAVE FILE ON DISK
X = X + 1
ADD QUESTIONS TO ANOTHER FILE?
YES
9
8
4